The mission of the Michigan 4-H Youth Conservation Council is to raise awareness and promote regulation of home heating oil tanks. To achieve these ends, the council recommends expanding the regulations of PA 207 to include a broader jurisdiction over home heating oil tanks. The council also suggests that the Michigan Department of Environmental Quality (MDEQ) is given the ability to ticket inadequate home heating oil tanks and supporting structures. Additionally, the education and training in proper inspection and fuel tank maintenance for fuel distributors should be enhanced in order to decrease the likelihood of a spill. These recommendations would serve to protect the environment, the people of Michigan, and the welfare of private industries.

Home Heating Oil

April 24, 2014

Michigan 4-H Youth Conservation Council

Introduction

Samantha Ellison

The Michigan 4-H Youth Conservation has chosen the topic of home heating oil tank regulations as our current topic for the year. We have researched the laws that are currently in place on home heating oil tanks, and have found that there is a large gap between the regulations that have been put in place and what is needed to protect the environment and private property from become contaminated by home heating oil. The council has reported on the current legislation that is in place, examples of previous home heating oil spills, the multiple subjects that are affected by oil spills, and the regulations that have been suggested both by council members and the Department of Environmental Quality. By improving the regulations that have been placed, or adding more guidelines pertaining to home heating oil tanks we will be able to prevent the loss of thousands of dollars in expenses to clean up land or property that has been contaminated by a heating oil spill, whether that be from a faulty oil tank or human error when filling a tank.

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General Information about Home Heating Oil Tanks

Mallory Ramelis

Home Heating Oil is a low viscosity, liquid petroleum based product that is used as fuel for furnaces or boilers. The oil can be stored in above-ground storage tanks (ASTs). They can be found in the basements, garages, or outside adjacent to the building. Other times they are stored in underground storage tanks (USTs). There are three types of tanks; steel, fiberglass, and a combination of both. Steel tanks is most commonly used then can be installed above or underground. Fiberglass tanks are becoming more popular and have been tested as fire proof. The combination of the two creates a tank with an inner lining of plastic that is protected by an outside steel jacket.[1] ASTs are used more widely because they are more cost effective.[2]

There are many cost involved with home heating oil tanks. These costs can range from just purchasing the oil to the maintenance and installation of the tanks. The cost of home heating oil cost for the 2013-2014 year in Michigan has ranged from $3.56-$3.91 per gallon. These cost were taken weekly by the U.S. Energy Information Administration. [3] Underground tanks are typically 500-1000 gallons. The EPA estimates around $13,000 to upgrade a three-tank system with cathodes for protection, and spill and overfill protection. To replace one of these tanks it can cost up to$80,000 and $100,000. That is assuming that no clean-up will be needed. Closing a tank requires emptying and cleaning the tank. Then it can either be removed or filled with an inert solid material. This cost about $5,000 to $11,000, also not including cleanup.[4] The ASTs has a very large range of cost when dealing with upgrading, replacing, and closing a tank. All of these costs depend mostly on the location of the tank. The highest price is typically $2,000 to have a tank removed.

The lifespan of a UST depends on the soil type. If the tank is stored in a clay environment then the tank will last 8-12 years, that's if the tank doesn't start leaking beforehand. When the tank is stored in a sand environment the tank can last 15-30 years. The last environment is a water table and the lifespan for the tank will only be 4-10 years.[5]

Overview of Home Heating Oil

Nicholas Heilman

Home Heating Oils no. 1 and no. 2 are distillate fuels which consist of distilled process streams. Residual oils such as fuel oil no. 4 are residues remaining after distillation or cracking, or blends of such residues with distillates. Diesel fuels are approximately similar to fuel oils used for heating (home heating oils no. 1, no. 2, and no. 4). All home heating oils consist of complex mixtures of aliphatic and aromatic hydrocarbons. The aliphatic alkanes and cycloalkanes are hydrogen saturated and compose approximately 80-90% of the oils. Aromatics (e.g., benzene) and olefins (e.g., styrene and indene) compose 10-20% and l%, respectively, of the fuel oils. Fuel oil no. 1 is a light distillate which consists primarily of hydrocarbons in the C_9—C_{16} range; fuel oil no. 2 is a heavier, usually blended, distillate with hydrocarbons in the C_{11}-C_{20} range. Straight-run distillates may also be used to produce fuel oil no. 1 and diesel fuel oil no. 1. Diesel fuel no. 1 and no. 2 are similar in chemical composition to fuel oil no. 1 and fuel oil no. 2, respectively, with the exception of the additives. Diesel fuels predominantly contain a mixture of C_{10} through C_{19} hydrocarbons, which include approximately 64% aliphatic hydrocarbons, l-2% olefinic hydrocarbons, and 35% aromatic hydrocarbons. Jet fuels are based primarily on straight-run kerosene, as well as additives. All of the above fuel oils contain less than 5% polycyclic aromatic hydrocarbons. Fuel no. 4 (marine diesel fuel) is less volatile than diesel fuel no. 2 and may contain up to 15% residual process streams, in addition to more than 5% polycyclic aromatic hydrocarbons. Residual fuel oils are generally more complex in composition and impurities than distillate fuel oils; therefore, a specific composition cannot be determined. Sulfur content in residual home heating oils has been reported to be from 0.18% to 4.36% by weight.[6]

Home heating oil comes from a spectrum of petroleum products. Petroleum is refined by using a distillation process. Petroleum refining is the process of separating the many compounds present in crude petroleum. The principle which is used is that the longer the carbon chain, the higher the temperature at which the compounds will boil. The crude petroleum is heated and changed into a gas.[7] The gases are passed through a distillation column which becomes cooler as the height increases. When a compound in the gaseous state cools below its boiling point, it condenses into a liquid. The liquids may be drawn off the distilling column at various heights. A general classification for one of the petroleum fractions produced in conventional distillation operations includes diesel fuels and home heating oils. Products known as No. 1, No. 2, and No. 4 diesel fuel are used in on-highway diesel engines, such as those in trucks and automobiles, as well as off-highway engines, such as those in railroad locomotives and agricultural machinery; although, they are used primarily for space heating and electric power generation.

Background on Heating Oil

Kennedy Cogswell

More than 10% of homes in America heat with heating oil or propane; most of the homes in the U.S. that heat with heating oil are located in the northeastern part of the United States. Heating oil is most commonly used in older homes. About half of the older homes that use heating oil were built before 1950, with the exception of the northeast those home are built before 1980 and still use heating oil. Heating oil equipment is older than average heating equiptment, but in most cases is regularly maintained. [8]

Heating oil in Michigan cost approximately $3.50-$4.00 a gallon.[9] Thermal heat is measured in BTU with is abbreviation for British Thermal Unit Measuring fuels by their BTU allows you to compare the heating values of different fuels. [10]Heating Oil contains 138,690 BTUs per gallon. It takes roughly 7.2 gallons of home heating oil to produce a million BTUs resulting in an average cost of roughly $27 per million BTUs (For the purpose of simple comparison, all units will be converted to one million BTUs). When looking to switch over from heating oil consumers have the option to switch to propane, natural gas, electricity, and kerosene. [11]

Propane produces around 91,500 BTUs per gallon at that the cost of $3.50 per gallon.[12] According to Elk River Public Utility District (ERPUD), the cost of propane per million BTUs is $38.50. It takes 11 gallons of propane to make up a million BTUs. Compared to home heating oil's million BTUs cost of $27, heating with home heating oil is more cost efficient. Natural Gas also produces 100,000 BTUs per therm, which is roughly 100 cubic feet. Natural gas produces a million BTUs per 10 therms. There is two ways that natural gas is distributed year round and heat only; the respective prices being $.91 per therm vs. $1.01 per therm. Using an average rate of $.96 per therm, the average price for 10 therms would then be $9.60, in other words $9.60 per million BTUs. Likewise, kerosene produces 135,000 BTUs per gallon at $3.75 per gallon. It takes about 7.4 gallons to produce a million BTUs. It cost $27.75 per million BTUs using kerosene. When comparing home heating oil and kerosene's cost efficiency the difference is negligible at $.75 per million BTUs. There is also electricity produces, 3,413 BTU per kilowatt hour (KWH) at $.085 per KWH. In order to produce a million BTUs it takesn293 KWH; it cost $24.91 per million BTUs when heating with electricity. Therefore, when comparing home heating oil vs. electricity, electricity is more cost efficient. [13]

In conclusion, natural gas is generally found to be the most cost efficient option for those who are able to obtain it. But for those who do not have access to natural gas, would find it most cost efficient to either heat by using home heating oil, or a kerosene heater. This is because the BTUs created per unit exceed those produced by electricity even though electricity's end cost is lower. Propane is the least cost efficient because it produces the least BTUs per gallon, and also has the highest cost.

The Manufacture and Maintenance of Home Heating Oil Tanks

Faith Ureel

It is unsettling that any container of combustible fluid would be exempt from a state's rules surrounding the storage flammable liquids. Yet, this is case with tanks that store home heating oil in Michigan. In fact, storage tanks of heating oil do not even have to be registered in the state[14]. When these tanks leak, property is devalued, and many homeowners and their neighbors may face the costly consequences of poisoned well water. In order for Michigan to protect its precious groundwater, it is imperative that stricter regulations be placed on the manufacture and maintenance of tanks that store home heating oil.

While modern day storage tanks have to meet certain standards, such as a leak test[15], before they leave the factory, this has not always been the case, so people that own old tanks are under the constant threat of a leak. In the present, most tanks are made of steel, though fiberglass tanks are growing in popularity[16]. According to the Environmental Protection Agency, all steel in contact with the elements should have cathodic protection, such fiber-glass-reinforced plastic, to protect from corrosion[17]. Additionally, all tanks should be manufactured with overfill protection, such as such as suction piping, and this piping must be sloped downward into the tank. Of course, even a tank manufactured with the aforementioned recommendations isn't impenetrable. For this reason, extra precautionary equipment is often produced by tank manufactures, and in reality, all tanks should be furnished with these accessories. Such items include secondary containment: a polyethelene drip pan or a tub with a volume 110% the volume of the tank for above ground tanks[18]. Federal standards mandate that all secondary containment include some form of interstitial monitoring, such as liquid sensors. For the benefit of all, Michigan should conform to these production regulations.

Another potential solution to Michigan's leaking home heating oil tanks is to create rules surrounding the maintenance of these tanks. Some general guidelines include securing above-ground tanks to a level surface and a clearly marked fill pipe[19], for the convenience of both oil distributors and homeowners. Reiterating the crucial point of additional protection, property owners should take it upon themselves to purchase leak prevention/detection equipment, such as an overfill alarm or a catchment basin around the fill pipe[20]. Such protection should be mandatory. Heating oil tanks require much maintenance in order to not be an environmental hazard. The EPA advises that the leak detection system that owners' should have installed be monitored on a monthly basis, and that the tank has testing for tightness every five years. The good news is that there are a variety of options for monthly monitoring depending on an owner's budget. An automatic gauge on a tank will read out the temperature and product level at all times, while liquid/vapor monitors will detect traces of oil in the ground, though those require the installation of special wells. A more technologically based system, Statistical Inventory Reconciliation (SIR), even utilizes computer software[21]. There are many ways to fix the leaking home heating oil tank issue in Michigan that are already available, all that is required is government action.

If action is not taken to halt the ongoing dilemma of leaking home heating oil tanks, the future of Michigan's groundwater is dubious. Water is arguably the most precious resource of the two peninsulas. The politicians of the present must place regulations on the storage of home heating oil in order to ensure the security of this invaluable liquid for years to come. The Council would recommend putting a set of regulations regarding the production and maintenance of tanks in

place. Mandatory cathodic protection or secondary containment would serve as good preventative measures. Additionally, the law should require that tanks should be equipped with a monitoring system in order to catch leaks early and minimize damage. As the great ecologist, Barry Commoner, once said, "Environmental pollution is an incurable disease. It can only be prevented."

Home Heating Oil Tank Leaks and Prevention

Elizabeth Troxell

Although home heating oil tanks are great for heating your home, they can be a danger if they are not properly maintained and replaced and a leak occurs. The majority of leaks can be prevented necessary actions are taken when testing has shown they have reached the end of their life span. The life span of a tank varies greatly; people have reported tanks in good condition that are many decades old, but unfortunately, some tanks have failed earlier. [22] Experience has shown that newer tanks made with recycled metals often tend to corrode and leak more quickly than tanks installed many years ago. Also, it has been found that tanks that have been treated with a liquid corrosion inhibitor will last longer than unprotected tanks.[23] That being said, there are quite a few different causes of oil leaks, some of these cause are (but are not limited to):

- Rust, decay, or frost shift
- Overfilling of either UST's or AST's;
- Failing tank supports, sight gauges, valves and other equipment problems
- Broken lines, tank tipping over, or lines severed due to falling ice, snow removal or landscaping
- Delivery of heating oil into the wrong piping system, such as disconnected lines, abandoned groundwater well piping, or other pipes that look like fill pipes
- Not inspecting and maintaining the tank on a routine basis.[24]
- The buildup of "acid sludge" in the bottom of a tank
- External rust[25]
- In addition, there are many different ways a leaking tank can be identified, these include (but are not limited to):
- Heating oil consumption greatly increases, even though the weather is not unusually cold.
- Dead or dying vegetation in the area of the tank.
- Heating oil odors in the house or emanating from the ground.
- Dark stained soils compared to the surrounding native soils.
- Oily rainbow sheen on water beneath the tank, in basement sump or footing drain discharge.
- Staining around the fill pipe.[26]

Therefore, I believe that there should be regulations put in place on the proper handling and care that should be used to keep a home heating oil tank in proper condition. By having these regulations there could be a large decrease in the number of home heating oil spill and leaks.

Environmental Effects of a Home Heating Oil Spill

Samantha Bellairs

While spills that occur though home heating oil tanks are on a smaller scale than those that would occur through trucks or pipelines the basic effects on the environment are similar if not the same. Even a small scale oil spill can affect water, animals, vegetation and soil quality, while these are not publicized like those in the Gulf of Mexico or in large rivers the importance to get them cleaned up is necessary.

Water can be one of the biggest resources affected by oil and even if it's heating oil both above ground and underground water supplies could be at risk. If the spill should run into nearby lake or stream or even a marsh, the not only is the water itself at risk but the fish who live in the lake or stream, the sediment and organisms within are all effected along with any plants that live there. The sediment on the bottom of the lake traps the oil from the spill and kills the small organisms such as worms, insects and shellfish. The larger fish that eat these contaminated organisms will eventually be poisoned.[27] Groundwater is also at risk in the event of a spill from a heating oil tank. The oil could leak and slowly spread down into the ground where a drinking water well is located; if this happens it is not only an environmental problem but potential health issues could form. Cleaning up groundwater is both difficult and expensive; sometimes it is impossible to clean so that it is up to drinking water standards.[28]

Plants are a major food source for both people and animals, if oil in spilt into a farm field humans could be affected along with the environment but it is more likely plants that live near a tank will be affected by home heating oil spills. Oil that spills under a tank is likely to kill grasses and soak into the ground contaminating not only the ground but killing the local plant life and potentially contaminate ground water.[29] Like a stream or lake the plants in or around the stream or lake could be affected by a heating oil spill. While it is less likely that enough oil will spill from a tank to smother plants on the lakeside or beside a stream if consumed the plants can still become harmful.[30]

Oil spills are an environmental hazard, even if they are not as big as those that happen on oil rigs or from pipelines home heating oil still poses a threat to the environment. All the species in a habitat have an impact on each other, if the oil starts in the ground or near a lake or stream or even a marsh it will work its way up through the food chain to affect all the plants, and many other organisms involved.

Home Heating Oil Effects on Animals

Kyle Russell

One of the many things home heating oil affects are living creatures, specifically the birds, fish, and invertebrates. Even though a spill doesn't seem like a major problem to begin with, it can spread and it doesn't just affect the animals immediately in contact with the oil.

Even though home heating oil has had its ups and downs in the pricing arena, "it is the main source of heat in about 8.1 million American homes. People living in the northeast US are more likely to heat their homes with oil than other parts of the country, consuming more than 80% of the total used every winter.[31]" These staggering numbers represent a large population of home owners heating with heating oil. If oil leaks or spills into our environment, it causes significant damage to invertebrates, plants, mammals, birds, and fish. Overall, home heating oil "is a moderately toxic substance that can do serious damage to the environment."[32] Also, humans are affected by environmental pollution. It is best to have specific regulations on all size holding tanks for home heating oil.

As invertebrates move around freely in their environment, coming into direct contact with oil is extremely toxic. Oil can smother some small species of fish or invertebrates.[33] If the invertebrate isn't immediately and directly affected by the oil, it will continue to have oil and residue on its body. When a predator eats the invertebrate, it can damage the predator, and accumulate in its body. This chain reaction interferes with the natural food chain.

Just as the invertebrates may respond differently to oil contamination, so do all plants. When plants are contaminated with the home heating oil, they often die. In fact, plants are affected in two ways: from the oil itself and from the response or cleanup operations. The oil, as well as the products used to clean-up any oil spill would need to be completely removed from the soil before plant life could resume life in the soil they once thrived in.

If you have ever gotten bleach on a shirt, you will notice that the bleach destroys the shirt instantly by eating it away. Oil, in the environment, works similar to bleach. When the oil comes in contact with mammal's fur or bird's feathers, it will destroy the fur or feathers. As you would naturally want to be clean, so do the mammals and birds. Unfortunately, when mammals try to lick themselves, to clean off the oil, they digest the oil. Once enough oil is in the digestive track, the mammal dies. With birds, once their feathers are contaminated, oiled birds cannot fly or swim. This alleviates their ability to flee from predators (that will eat them as well as the oil, and then become sick). Another possibility is that the birds will not be able to fly to find food. They will wander aimlessly, suffering as they die. And, similarly to mammals, they too will try to clean themselves and in trying to do so; they will ingest the oil and die if they ingest enough. Any of these natural survival modes do not save mammals or birds from the fate they are about to endure after their encounter with oil.

Home heating oil in water can also affect fish in many ways, and can even cause death. These fish either die due to oil blocking their airway or their growth can become stunted, later causing them a heart attack. Losing fish to unnatural causes results in a break in the food chain as well as a possible loss in profit for local fisheries.

Cancer, respiratory disease, skin problems, and various blood diseases are a few of the problems that humans can expect from petrochemicals. These are chemicals derived from oil spills or leaks. Sometimes these leaks go unnoticed for a period of time (especially if a buried

tank develops a leak) allowing humans to come into contact with harmful chemicals unbeknownst to them.

Oil pollution can remain in the area for more than 30 years and still affect animals and humans throughout this time. "Even after the source of the leak is stopped, the leaked oil will saturate surrounding soil, flow into cracks and drains, and get beneath floors and walls and remain there until it is cleaned up."[34] Cleanup can be costly and even cause bankruptcy. To prevent devastating damages as mentioned above, to invertebrates, mammals, birds, fish, and humans it is best to have regulations on all tanks holding home heating oil regardless of the size.

Home Heating Oil Spills

Jerry Dunham III

Home heating spills can cause environmental and home damage. Home heating spills can cause a home to smell and even become uninhabitable. The home heating oil can also get in to the ground water causing trees and other plants to die, or can get in wells and home owner drinking water. There are many accounts of home heating spill and causing a lot of damage and costing home owner and oil companies a large sum of money.

In the winter of 2010 Phyllis Meek and Angela McCartney started to smell a rotten egg smell throw their home in Saginaw, MI. then they looked at their home heating oil tank and they saw a pink liquid dyeing the ground and snow around their house and tank. They put a bucket under the leak and called their oil company to come out and look it at it. The oil company driver came and told them if they reported the spill it could cost Meek-McCartney family millions of dollars. Meek then called K & D Industries to come look at the spill. K &D came and sucked up the oil and the family had to put their house on blocks to rebuild the foundation. This caused the Meek mother who was eight months pregnant, McCartney, and their three children to move out and into their relatives' houses. They also found out that their insurance company will not pay for the clean-up. The clean-up will cost the families more than a quarter of a million dollars. The oil fume was still in their house after the clean-up and the moving of the house also caused the family to have to remodel.[35]

In 2002 a diver for a home heat company was filling a 500 gallon tank in Saginaw. The house had just recently got a new tank on the other side of the house, yet the driver was unaware of this. The driver of the truck filled the wrong tank and filled the basement with oil. The clean-up cost them about $51,000 and the house today is still uninhabitable. The oil company had to pay for this cost after a court battle. [1,36]

These examples are a large perceptive as to why home heating oil tanks need to be regulated by the state government. The divers of oil company trucks need to be taught how to inspect the oil tanks. This would help reduce the amount of tanks that leak and cause damage. The home owners need to know who to call if they believe they have a spill. Spills like this will only continue to happen if nothing is done to stop home heating oil spills.

Tank Disposal and Removable

Osten Eschedor

Many underground home heating oil tanks are bare steel tanks that were not designed to be buried and, if left in place, will eventually rust and leak. Even larger tanks that were specifically designed for underground use can leak if they do not have adequate corrosion protection and will not last forever, and will leak eventually.

Removal contractors generally charge between $1,000 and $2,500+ depending on the size of the tank, its condition, and how easily it can be reached (above or underground). Not including the cost of a replacement tank, sampling and testing, cleanup work if a leak is found, and landscaping after the removal is complete.

Some homeowners may consider leaving the tank in place and just drain the remaining oil. Depending on your local regulations and approval of your local fire department, this may be an option, especially if access to the tank is limited by a building or the removal may jeopardize the structural integrity of your home. In this situation, you will need to have the cleaned and the area around and underneath must be checked for contamination. Once the area is determined clean, the fire department may then permit filling with sand or concrete. Getting this done will cost somewhat more than having your tank removed from the ground. In addition, should you decide to sell your home, a bank or the buyer may ask for more environmental testing or the removal of the tank, which could make leaving your tank in place costlier than taking it out of the ground at the start.[37]

A large factor when looking at home heating oil spill is, what is the actual cost of clean-up? In the event of an underground tank or pipe leak, the cleanup can cost anywhere from $7,000 - 20,000 or more. This includes the cost of tank removal, pre- and post-removal soil testing, contaminated soil removal and disposal testing of ground water and any permits, fees or fines as determined local and/or state government.

Many homeowners' insurance policies contain a Pollution Exclusion clause, where you may not be covered in case of a leak. The best way to avoid spills and extra expenses is to replace an underground tank before it leaks, with an above-ground tank located in your basement, garage, or storage shed.

When a tank is removed the following steps are required for either underground or aboveground storage tanks that have been out of service for more than 12 months or will not be used again:[38]

- Empty the tank, and empty and cap pipes. Many homeowners have the heating oil company from which they purchased the oil, also pump the tank.
- Have the tank professionally cleaned before removal. There are usually tank-cleaning firms listed in the yellow pages of most telephone books under "tank cleaning" and "environmental and ecological services."
- Contact the local authorities to see if any permits are required for tank excavating.
- Remove the pipes and tank unless removing them would threaten the structural integrity of a nearby building. If the underground storage tank cannot be removed, it must be filled with an inert material (sand, gravel, or cement) before closing in place. Aboveground storage tanks can be left in place if the tank is safeguarded against

trespassing and the filling portals locked to prevent trespassing.

- Heating oil tanks located in basements must have the fill pipe "blind flanged" (a solid disk inserted at a pipe joint) to prevent the heating oil from being mistakenly pumped into the basement if the tank was removed.
- A site assessment must be performed in accordance with Section 2.6.5 of Part 2 of the FL/CL Rules for underground heating oil tanks of 1,100 gallons or more. A site assessment is recommended for tanks less than 1,100 gallons.
- Dispose of the tank properly. Preferably, the tank should be taken to a salvage yard for recycling. Contact the local salvage yard for more information. If a salvage yard is not available, contact the local landfill for more information.

Home heating oil tanks do have a limited life expectancy, especially if located underground. As with many situations, it is less expensive to address the removal of a tank prior to any loss of structural integrality or leakage. Environmental concerns come into play if a heating oil leakage does occur and the soil surrounding the tank is contaminated. Homeowners have options in either situation and there are resources in local government and many companies that can assist throughout the removal process.

Driver Education and Tank Inspection

Allison Melcher

One day an oil spill happens near your house. The oil quickly spreads across the surface of the water and seeps into the soil. It makes your ground water unsafe to drink and your land unsuitable for growing crops. The stench of oil is overwhelming. Clean up attempts are made, but they are very costly and very time consuming. Months later you are walking along the shore and see that oil is still floating there. The disgusting smell still hangs in the air. You still cannot use your land for farming and you still cannot drink your well water. I am describing a home heating oil spill. According to the US Department of Energy, 7.7 million American homes are heated with heating oil. With such a large number of people using heating oil, even so called "small leaks" could add up to a huge problem. Today I will be telling you what heating oil is, why it is problematic, and what can be done to solve these issues.

First I will be explaining what heating oil is. Basically, it is exactly what the name implies. Heating oil is a type of fuel oil that is used to heat buildings. According to the International Association of Certified Home Inspectors, heating oil is very similar to diesel fuel, except that it comes without dye and without state taxes. Home heating oil is a cheaper alternative to other methods of home heating, which is why it is used by so many Americans. However, heating oil is a toxic substance that can be very dangerous.

Why is home heating oil so problematic? Heating oil spills can be very damaging to human health. When heating oil is properly stored in well-constructed tanks, it is not very dangerous. The problem begins when heating oil is improperly stored. Heating oil tanks are not

regulated by the government, and they are not regulated by most heating oil delivery services. For most people, the possible consequences of a heating oil spill are not something they think about often. However, home heating oil spills are actually fairly common. Oil leaks and spills can happen for a number of reasons, such as when a storage tank develops a leak, is damaged or overfilled, or when oil is accidentally filled into a septic tank or into fuel lines that are no longer attached to a fuel tank. Regardless of the cause of the spill, cleaning it up is extremely expensive, often costing hundreds of thousands of dollars, putting homeowners in danger of bankruptcy.

Aside from the damage to your wallet, there is the more pressing concern of the damage to your health. Short term exposure to heating oil fumes can cause headaches, nausea, high blood pressure, dizziness, and irritation to the eyes, nose, and throat. Long term exposure can cause liver and kidney damage, weakened sense of smell and taste, and put you at a higher risk of cancer. Consumption of even one just one ounce of heating oil can lead to death, especially in children, who are the ones most likely to accidentally consume or play in contaminated soil.[39] Clearly, heating oil can be very dangerous when it leaks or spills. So what can be done? The third thing I will be telling you about today is possible solutions to the problems of home heating oil. One solution is government regulation. The regulation of fuel oil tanks is not a novel idea. For instance, propane is required to be stored in proper, certified tanks and propane tanks must be regularly inspected for damage, and propane deliverers must be certified. If those same regulations were placed on home heating oil tanks, the number of heating oil spills could be greatly reduced.

In Michigan, propane deliverers are required to be trained to recognize improper tanks. Since 1988, the National Propane Gas Association has provided certification testing services for the Certified Employee Training Program (CETP).[40] The program was developed in cooperation with propane industry groups and associations. I recommend that home heating oil deliverers also are required to have training and be certified. The training would be fairly basic. They would be required to know how to identify improper tanks, detect a leak, and operate all the delivery equipment properly.

The Liquefied Petroleum or Carbonic Gas Containers Act of the Michigan Compiled Laws (Act 241 of 1959) contains laws pertaining to propane tanks. The first section of the Michigan Act defines "liquefied petroleum gas" as any substance composed primarily of propane, propylene, butanes or butylenes. Michigan law requires that the surface of a propane tank be marked in plainly legible characters with the name, initials, mark or other identification of its owner.[41] A person may not sell or deliver a propane tank unless the surface of the container is marked propane. Violation of the law is a misdemeanor under Michigan law. Each container possessed in violation of this act is a separate offense. If this bill was expanded to include home heating oil under these regulations, the damage from heating oil would be greatly reduced.

Spills of propane do happen, are often less damaging than spills of home heating oil due to the restrictions on the location of propane tanks. Just a few changes to the way home heating oil is regulated could make a big difference in environmental quality and human health.

In conclusion, today I have told you about home heating oil. I have gone over what home heating oil is, why it is dangerous to human health, and how to avoid leaks and spills of heating oil. I recommend that Michigan require education for home heating oil deliverers and require home heating oil to be stored in regulation tanks.

Homeowner Costs and Education

Parker Foote

In addition to negative impacts on the environment, residential heating oils can be very expensive for the property owner, in terms of both cleaning up damages of surrounding environment and also value of the lost home heating oil. Property values may also be diminished in association with contamination that has not been addressed. The average cost of cleaning up a residential heating tank spill is around $20,000-$50,000. In many cases homeowners insurance will NOT pay for the damage and clean-up costs. Heating oils may contaminate property when: Cracks or leaks occur on drums or in oil lines, flood water spreads leaked oils to other parts of property. So be sure to get your tank inspected annually. The cost of a new tank may cost around $500 on top of environmental and property damages and cleanup in the event of a spill.

No matter who spills the oil, the property owner is responsible for clean-up. Whether it is a spill or a leak, and no matter where it escapes from, the correct term is a "release." Clean up costs for a residential release average between $20,000 and $50,000, but can exceed $300,000.You can minimize your risk of a release by getting a reliable heating contractor to inspect your heating system; consider replacing your system if it's over 15 years old.

A heating oil release on your property makes you responsible for ensuring that the proper steps are taken to clean up the release. In most situations, the current owner of a property where a release has occurred is considered legally responsible for cleaning up the release, regardless of who is at fault. You will receive a Notice of Responsibility from the Department of Environmental Protection detailing your legal responsibility to assess and clean up the spill. Under the state cleanup laws, when you have a heating oil release, you are considered potentially responsible. Cleaning up oil leaks from home heating systems can be very expensive averaging from $20,000-$50,000.[42]

For all above ground tanks; be sure to ask an oil technician to inspect the stability of the above ground tank. A full 275-gallon tank weighs more than 2,000 pounds. They have metal legs and should sit on a concrete pad. If the legs become loose or the pad cracks, the tank can fall over and rupture, causing a spill. Replace an outdoor above ground storage tank that has been uncovered for 10 years or longer. These tanks can rust from the inside out, so cleaning or painting the outside does not always prolong their life. Also protect the tank from the weather, such as falling snow, ice, trees and any other falling or leaning hazards.[43]

Pros and cons of an oil furnaces, based on: budget, efficiency, safety, convenience and environmental friendliness.

Installation costs are about the same as any other standard type of furnace. However, you will have to buy oil regularly to keep it running. Since the cost of oil changes, you may end up paying more than you initially imagined. Maintenance costs can also exceed other types of furnaces, since you will probably find yourself replacing parts from time to time.

Oil heating is very efficient although they are not known for fuel consumption efficiency. They can manage high temperatures to battle cold winds and covers large spaces evenly. Oil furnace controls are generally straightforward and easy, so you can get just the right temperature throughout the house.

Oil furnaces emit low amounts of exhaust fumes, but they also pose a very dangerous risk of a spill. Oil spills are very dangerous and can damage your home and property. Your home's chimney design can also affect your heating system's environmental impact.

Although oil is flammable, the function of the furnace is designed to be safe. In fact, unlike gas furnaces, oil will not produce carbon monoxide. Additionally, oil will burn, but not explode, so there is little risk if it's handled properly at all times.

Natural gas heaters hook up to a city or regional infrastructure, which means that you don't have to worry about running out, with heating oil, you have to keep your house stocked up and keep track of maintenance.[44]
The following are heating oil usage factors compared to propane:[45]

• Propane emits 25% less CO2 into the atmosphere than oil, per gallon burned.
• Propane boilers burn at 10-15% higher combustion efficiencies than oil boilers, exacerbating the pollution gap between propane and oil, and narrowing the cost gap.
• Propane boilers never or rarely need cleaning. Oil boilers need cleaning annually and their efficiency drops the further they get from their cleaning throughout the heating season.
• Propane boilers do not need a chimney, allowing the chimney to be used for wood or pellet burning appliances. All oil boilers need their own dedicated chimney.
• Propane boilers pull combustion air from outdoors. Oil boilers pull combustion air from inside the home, which pulls cold make up air into the house.
• Oil boilers are 'high mass' devices consisting of about 500 lbs. of steel that must be fully heated to 180 degrees each time you need heat or hot water—and it is connected to a drafting chimney.
• As a result of the high mass design, oil boilers typically waste 1⁄2 to 3⁄4 of a gallon of oil per day, or roughly 180 gallons of oil per year, through standby heat losses.
• Propane boilers are generally quiet; oil boilers are generally loud.[46]

In conclusion, the more fuel you burn to heat your home, the more home heating oil makes sense. The less fuel you burn, because your house is smaller, better insulated, or heats with wood, the less heating oil makes sense. Consider a switch away from home heating oil, to a combination of gas, solar and wood energy.[47]

Private Sector Insurance Costs and Perspectives

Christopher Chen

What kinds of insurance plans, if any, are out there for homeowners or businesses who are worried about the safety of their homes and businesses due to the threat of home heating oil spills? How much do they have to spend to protect themselves? These are the kinds of questions that are inevitable when the topic of home heating oil spilling is discussed. Although there are thousands of insurance companies in Michigan, only a small amount among those offer property insurance, and an even smaller number still cover the costs of a local home heating oil spill. Because of their steep potential cost, the insurance companies that do offer coverage often have riders regarding the coverage of home heating oil spills. Price, coupled with the fact that many of these spills occur in areas with lower population density, has largely drawn public attention away from this crippling environmental problem. Although some insurance companies cover heating oil (fuel oil number two) spills, the amount of regulation on these spills is still woefully

inadequate. The registration of heating oil tanks, low-interest loans, the training of truck drivers for safe heating oil tank inspection, and other measures needs to be implemented in the coming years, with the support of the Michigan insurance industry.

In Michigan, many insurance companies shy away from offering compensation for home heating oil spills, and even if they do, most have special riders on the policy that require homeowners to pay more for extended coverage[48]. Underground storage tanks often leak solely because of simple negligence, but they can also leak because of a plethora of variables leading to spills involving the tank manufacturer or the company that fills the tanks.[49] Homeowners may have some repose, however, if they did not explicitly know about the tank's problem, or the spill was caused indirectly by disasters that are covered, such as natural events and weather conditions; in these cases, it may then be classified as an accident[50]. In Michigan, homeowners will find two types of major homeowner insurance regarding home heating oil spills: "Broad" HO-2 coverage, which covers damage to specific events such as natural disasters or vandalism, and safer, "All Risk" HO-3 coverage, which covers all perils except those excluded such as home heating oil.[51] At the time of a spill, homeowners are supposed to contact the government, providing notice to the DEQ and property owners who may be affected, and hiring an environmental consultant and going to a landfill to help with disposal, but they often don't.[49] As of now, the vast majority of insurance policies will "contain exclusions from coverage related to Home Heating Oil Spills" and thus not cover home heating oil tank spills.[52]

In many other states in the Midwest, and many states on the east coast, there are Americans who use number two home heating oil to heat their homes. States like Pennsylvania, Illinois, Massachusetts, New Jersey, and others are all large heating oil consumers, and likewise face similar issues. In the past, these states have largely had insurance companies who did not cover home heating oil releases. However, some states are already moving towards a more effective system, a system that residents in Michigan should adopt: The state of Massachusetts passed two important heating oil laws. The first requires home heating oil users to upgrade their tanks or heating systems to prevent leaks from tanks and pipes.[53] This change is significant, as it resets the heating oil market by ensuring that all heating oil tanks from now on are new and not antique. The second major change in legislation is Chapter 453 of the Acts of 2008, which was amended in 2010 to require the installation of an oil safety valve or oil supply line, and a requirement for insurance companies to offer coverage for leaks from heating systems that use oil[53]. This change is revolutionary compared to existing policies in other states and Michigan, because it causes a change in liability, in which insurance companies are given a reason to work to prevent these spills. Also, several insurance companies in New Jersey who usually do not cover the expenses of a heating oil spill will now cover it if it either has an impact on public resources, such as groundwater, or if it contaminates a third party such as a neighbor's house.[54] Despite insurance companies all over the nation being historically similar in their options for homeowners, other states besides Michigan who have residents who use home heating oil have adopted several breakthrough measures; with the support of the insurance industry, Michigan has the opportunity to follow suit.

Between the insurance companies in Michigan and other Midwestern and eastern states, there are many measures that both regions offer. Insurance companies in most states, including Michigan, often times excludes direct coverage for home heating oil tank leaks, especially if they are not an accident[55]. Michigan and other states also provide some amount of grant coverage for residents who are in economic hardship and meet this environmental disaster. However, recently, several states, such as Massachusetts and New Jersey, have begun to adopt new

measures, measures that would inexplicably tie insurance and the government together in fighting continued occurrences of heating oil spills in their states[53], while Michigan homeowners who are victims of heating oil spills continue to face a system that is outdated, unknown, and sometimes creates harsher conditions for them by requirements by the government to mitigate the oil in the ground and take the full financial brunt of the spill. Without the support of insurance agencies, and government agencies and legislation, these residents will continue to suffer under the full underserved liability for these disasters and spend thousands of dollars trying to fix them. With the support of these groups, insurance companies, government agencies, and the homeowners themselves have a chance to make Michigan a safe haven for all kinds of energies, including home heating oil, for future generations.

Home Heating Oil in the Real Estate Industry

Julia Reynolds

Home heating oil tanks have become a problem that can not only affect those who already own land where oil tanks are present, but also for real-estate agents who are unintentionally attempting to sell homes with outdated or failing home heating oil tanks. The presence of a home heating oil tank on the property can raise heating system concerns for prospective clients to the real estate industry and lead to lost money. While it is required for a seller to disclose the presence of a known heating oil tank on the property, currently no regulations exist on the condition of a heating oil tank when it is being sold with real estate, raising the likelihood that tanks that are hazardous will be used by the new home owners.

Four percent of the homes in the State of Michigan have home heating oil as their source of heating[56]. That is about 181,000 homes in Michigan that could possibly be turned into profit through the real estate industry[57]. Currently there is no evidence to support that having home heating oil makes a home more difficult to sell, but buyers are sceptic about having heating oil as their main source of heat in their house. A property, even with a stunning interior, great curb appeal, and a coveted location, could still be hard to sell for a realtor if it uses home heating oil. Some properties have even known to stay unsold until the heating oil tank is removed and the house is switched to another heating source[58].

Home heating oil tank leaks can be disastrous to the real estate industry because of the effect that they can have on the property around them. If property in the vicinity of the real estate property has evidence of a leak of home heating oil; the oil could get into the ground water system and lower the value of the homes around it. When a leak is being properly cleaned up, it is not pleasing to the eye and this will scare potential buyers away from a property, because no one wants to live next to a construction site.

The Michigan Public Act 92 was created in 1993. The Michigan Public Act 92, also known as the Seller's Disclosure Act, requires that a seller has to disclose any information they have about environmental problems on the property or in the home. Unfortunately, it is possible for a seller to not be knowledgeable of every aspect of their property. Therefore it is suggested that a

realtor/buyer should search the property for the telltale signs of pipes jutting out of the ground close to the outside of the house or sawed off pipes in the basement[59]. It is then suggested to have the property inspected by a professional for signs of a heating oil tank before they even think of buying the property[60].

The buyer can request an inspection and the seller is responsible for getting an inspection on the property. Some realtors have been known to walk away from a property where they suspect undisclosed heating oil tanks to be abandoned until a thorough inspection is done on the home. This results in the real estate business losing time and therefore money. A bad report on the inspection could also cause a sale to fall through if a problem is found with the heating oil tank, such as a leak, resulting in more lost time and money. However if an inspection is not completed, the new owner runs the risk of having a hazardous oil tank that could eat up their money in the future due to spill cleanup it may require.

Federal Regulations

Randi Rice

Home heating oil tanks pose a large threat to the environment should they spill. Therefore, the tanks need to be regulated to lower the chance of a spill as much as possible. Home heating oil tanks are currently not included in the federal regulations of the Environmental Protection Agency (EPA) surrounding underground storage tanks.[61] Nor does the Department of Energy regulate the tanks. This means that all regulations fall to state and local governments. However, the EPA does have an underground storage tank (UST) program which regulates other storage tanks. This mainly includes the regulation of underground petroleum tanks. The EPA has the authority to give a citation to someone with a tank that is either not up to standards or is leaking. The person that receives the citation then has 30 days to get their tank(s) back up to standards and to make their payment to the EPA.[62]

Regulations in Neighboring States

Cheyenne Hewlett

Minnesota and Wisconsin have their own regulations on home heating oil. In this paper you will inform you of those regulations and give examples of what our state government can do to regulate home heating oil tanks. These examples are very relevant because our state is falling behind with its regulations compared to other states and Michigan could adopt some of these regulations on home heating oil

The following are Minnesota's spill protection and prevention requirements. Companies must keep records up to date customer list. Companies must ensure that customers who have requested termination of oil services are removed from delivery list[63]. Some deliveries of home

heating oil have been made to homes which have converted to propane or natural gas and the home heating oil was pumped into the basement with no tank to receive it. This type of incident could contaminate a drinking water well, ruin a septic system, penetrate concrete block, creating odor problems, or enter a sump system and be pumped to surface waters. These types of cleanups are very costly. Companies can prevent some of these incidents by keeping up-to-date and accurate delivery information on their customers. Inspect hoses and other equipment for defects, wear, or breakdowns on a daily basis to ensure proper and safe operation.

Drivers must know correct delivery information. Companies must compile information that will help drivers, such as type of delivery, location of fill pipe, and map of property showing locations. Companies should keep this information in a book or on a computer for reference during deliveries and make it company policy that drivers will refer to this information before each delivery. Companies should train delivery staff on safe delivery procedures and handling, how to spot trouble, and prevent accidents, basic spill response procedures, and what to do in the event of an emergency. Companies should create a step-by-step process or checklist that will be used for each delivery.

Minnesota's responsibilities by law are as follows. According to Minnesota Statute (115E.02), a person who handles or is in control of hazardous substances or oil "shall take reasonable steps to prevent the discharge of those materials in a place that might cause pollution of the land, waters, or air of the state or that might threaten the public's safety or health". Oil delivery companies should be prepared to show what their reasonable prevention steps or delivery protocols are.

Lastly are Wisconsin's regulations on home heating oil. Wisconsin Administrative Code Comm. 10 regulates all aboveground storage tanks (ASTs) 110 gallon capacity and larger storing liquids that are classified as flammable, combustible and/or hazardous chemical[64]. All underground and aboveground storage tanks must be installed under the supervision of a Wisconsin Certified Installer or a Professional Engineer. A pre-installation plan approval by the department or designated agent is required. The exception is to aboveground home heating oil tanks that are installed by a Heating, Ventilation, and Air Conditioning "HVAC" contractor.

Aboveground tanks for motor fuels (vehicles, recreational equipment, lawn or garden equipment, etc.) are prohibited on residential property. Gravity feed aboveground tanks are limited to no larger than 1,100 gallon capacity for use on farms and construction projects only. A nursery or farm that conducts retail sales to the public on the property must move into a commercial use category. The code prohibits a complete "do-it-yourself" tank installation. This includes replacing existing tanks and piping. Most storage tank installations require special tools, test equipment, gaskets and sealing material that people not in the storage tank equipment business will not have. Several of the test procedures have life-safety risks that only trained and skilled individuals can perform safely.

All storage tanks must have a listing; such as UL or SwRI; or be constructed under and labeled as API 650 construction. The department does recognize a small population of non-listed tanks for specific purposes, such as for storage of some Class IIIB liquids. The code does provide some measures to accommodate the installation of aboveground tank less than 1,100 gallon capacity on farms via an expedited plan submittal and sign-off. Installations found in operation without plan review and approvals are subject to double the fees. All underground tanks and all but a small population of aboveground tanks 110 gallon capacity or larger must be registered with the department when initially installed. When a tank is removed it also must be registered as removed.

The state of Michigan should consider adopting some of these previously stated

regulations and/or create laws that apply to our state. Adding new regulations will help the environment and residents from future home heating spills.

Legislation in Ohio and Indiana

By: Brendan Rice

The Michigan 4-H Youth Conservation Council (YCC) has been researching the laws of heating oil tanks in Indiana and Ohio since the state of Michigan does not have any regulations at the state level. These two states were chosen for comparison because they have similar physical and climactic conditions as Michigan. Both of these adjoining states have laws surrounding heating oil tanks, and if we can incorporate similar legislation into our state, then it can benefit our environment.

First is the state of Indiana. In Indiana they clearly define an underground storage tank. In exact terms: "An Underground Storage Tank (UST) is a tank or combination of tanks which hold regulated substances and have at least ten percent of their volume underground, including underground piping connected to the tank." This also states that the tank has to have ten percent of underground volume. The YCC believes that regulations should be changed to include all tanks that have any amount of heating oil in them, whether above or below ground. In Indiana, the Indiana Department of Environmental Management (IDEM) also marks tanks as a hazardous waste even if they are not leaking. They will do this by putting a mark such as a sticker on the tank. In exact terms, these tanks are defined as "Tanks which store any substance defined as hazardous waste under Subtitle C of the Resource Conservation and Recovery Act (RCRA) (These tanks are regulated by the IDEM hazardous waste program. For more on hazardous waste regulation see the Generating Hazardous Wastes Permit Guide page)."[65] The YCC also discovered that the IDEM has regulations on how your UST system must be constructed. "Every UST system in use and every new UST system to be put in use has to have proper design and construction to prevent corrosion, have spill and overfill protection, and have a leak detection system as specified in 329 IAC 9-2-1."[66] Although above ground heating oil tanks are not regulated, they can be just as big of a problem. They have an equal chance of leaking and can cause just as big of a problem to our environment.

Ohio does not have laws specific to heating oil, but they consider all petroleum products as a hazardous gas/oil. Unfortunately, heating oil is not considered a petroleum product. They also allow and have no specific laws on underground heating oil tanks. "The Ohio Fire Marshal's Bureau of Underground Storage Tank Regulations (BUSTR) regulates underground storage tanks (USTs) that contain regulated substances. This includes any substance defined as hazardous in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof, which is liquid at standard conditions of temperature and pressure. Petroleum includes: motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils."[67]

If Michigan enacts laws similar to other states, such as Indiana, we can protect the environment and stand out as a leader for environmental protection in the Great Lakes State.

The YCC also believes that if we come up with new laws about heating oil, then we need to clearly state/define what we consider a heating oil tank like has been done in the state of Indiana. It is also a good idea to put a visual indicator like a sticker on the tanks to clearly define it as regulated and approved for use. It could be possible for Michigan to implement a program like this so that a sticker indicates it is a tank approved to fill with oil. That way the fuel oil delivery drivers would know whether or not to fill it up. If there were questions on whether a tank was approved and acceptable for use, a state-maintained database would be very helpful.

The YCC also discovered the following helpful legislative excerpt about the duties of the owners who have a heating oil tank in Indiana.

"Duties of owners:

Immediately upon abandoning the use of heating oil as a fuel in heating a property, the owner of a heating oil tank, under applicable state and federal law, shall: remove all flammable or combustible liquids from the heating oil tank, piping, and connections; and except as provided under subsection (b), remove the outside filling pipe.

An owner is not required to remove an outside filling pipe under subsection (a)(2) if the owner permanently secures the tank against accidental filling.

An owner of a heating oil tank described in subsection (a) shall, under applicable state and federal law, dispose of all flammable and combustible liquids"[68]

The YCC believes this is a very helpful law because makes it illegal to just abandon a heating oil tank after you move out. This is helpful because then the next person to move in doesn't get completely blindsided by the fact that there could possibly be a tank contaminating all of their land.

The YCC could not find anything on violations, penalties, or fines for improper heating oil tank uses in Ohio or Indiana. There also aren't any other regulations for drivers about filling up tanks.

Current Michigan Legislation

Dan Christensen

Home heating oil is currently regulated at a much lower standard than propane or regular gasoline. Under current Michigan legislation home heating oil tanks do not have to be inspected before refilling whereas propane tanks and gasoline tanks must be inspected by a certified individual before the tank can be filled. This prevents leaks from the propane and gas tanks and keeps residents safe from potential spills and large liabilities resulting from cleanup of spills from their tank. This great expense would be caused by the necessity for cleanup of the spill. This cost would most likely be an out of pocket expense as most insurance companies do not cover spills without an additional rider on top of expensive insurance plan.

Some of the differences between home heating oil and propane are an atrocity that needs to be fixed. Many of the costly spills could be prevented if Michigan legislation that applies to propane and gasoline were applied to home heating oils. Under current legislation a home heating oil delivery truck could deliver to tanks that are clearly structurally deficient with no possible penalty for putting humans and the environment in danger. If current legislation is left unchanged a feasible expectation for the future of home heating oils is more spills with an increasing frequency.

The regulations that have been imposed on home heating oil tanks and propane tanks differ extensively: below is a comparison of the current regulations on both products.

- Classification of bulk containers applies to any tank of 793 gallons or more.
- Upon notification by the DEQ, a person shall not deliver any liquids into a storage tank system under any circumstances. Notification may include verbal or written communication or an affixed written notification on the storage tank.
- Violation of the law is a misdemeanor under Michigan law. "Each container possessed in violation of this act is a separate offense." For example, improper transfer from a stationary propane tank or container into 50 standard, consumer-grade 20-pound propane cylinders is the equivalent of 50 separate offenses.
- The exterior of the bottom of tanks installed on a grade at the same elevation AAMs the bottom of the diked area, shall be protected against corrosion.
- A tank shall have a high-level detection system that is independent of any gauging equipment.
- The alarm shall be located here personnel, who are on duty throughout product transfer, can promptly arrange for flow stoppage or diversion.

Regulation for home heating oil are lacking compared to regulation to propane and gas. One of the few regulations for home heating oil is that any container that releases liquid at a quantity of more than 55 gallons to the ground or within a secondary containment area during a 24-hour period shall notify the DEQ.[69]

The lack of regulation on delivery, storage, and management of home heating oil has the potential to cause catastrophic problems for the health of residents which creates a need for further regulation. An addition to current legislation would drastically improve current regulation on home heating oil and the living conditions of afflicted people.

Proposed Legislation

Dakota Hewlett

Attending to the issue of home heating oil tanks in Michigan, especially the maintenance and regulation of said tanks, poses several problems on the legislative end of the issue. Changes need to be made to better protect Michigan's environment and the health and safety of its residents. New legislative action that aids in the prevention of home heating oil spills would have an immensely positive impact on Michigan. Not only would the environment suffer less damage but the heating oil and energy industry within the state would become stronger and more sustainable. Health risks in communities that rely heavily on home heating oil would drop and those communities could continue to flourish utilizing this proposed legislative action.

Points I will hit after further correspondence with Susan Erickson, MDEQ:

1. Suggesting regulation similar to what regulates propane
2. Oil delivery drivers are educated to inspect tanks before filling
3. Driver are given authority to red-tag tanks that leak or are not of sound construction
4. That the DEQ be given misdemeanor ticketing authority for tank upkeep or spill infractions
5. I will address that we have full DEQ support for our recommendations (when and if we do)
6. Suggestion to where/how new legislation is made. (i.e. amendments to PA 207, totally new legislation, additions to other current pieces of MCL)
7. Any follow-up with Sue Erickson involving other recommendation that other council members bring up that are not mentioned above.

(Awaiting final information)

Conclusion

Samantha Ellison

The Michigan 4-H Youth Conservation Council has come to the conclusion that the current regulations that are in place to ensure the quality of home heating oil tanks is not at the appropriate level in which to ensure that a these tanks do not cause an obvious threat to the environment and private property. By looking into our recommendations and strengthening the regulations that have been put in place on home heating oil tanks, there will be a large decrease in the amount of heating oil spills and it will give more power to trained officials who will be able to assess whether a tank meets the quality standard. The council believes that by changing the current regulations on home heating oil tanks, we will be able to better preserve private property, the environment, and human health.

Recommendations

Samantha Ellison

- Secondary containment for all tank units above and below ground
- Required registration of tank and identification of model safety
- State-wide upgrade of tanks
- Mandatory installation of safety supply lines in tanks

(To Be Continued)

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